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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,927	09/17/2003	Alexander Tetelbaum	02-5799 81604	6522

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EXAMINER

DOAN, NGHIA M

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,927

Applicant(s)

TETELBAUM, ALEXANDER

Examiner

Nghia M. Doan

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/17/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/17/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Responsive to communication application 10/665,927 filed on 09/17/2003, claims 1-27 are pending.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because state that abstract lacks narrative format and merely paraphrases claim 1. Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Claims 1-4, 14-17 and 27 are objected to because of the following informalities: these claims contain term "resistance graph", which is not a terminology used in the art.

Claim 27 is objected to because the steps are missing order. For examining purpose, these steps are re-ordered as the following:

claim 27, line 21, step (d) changes to step(c);

Art Unit: 2825

claim 27, line 23, step (c) changes to step(d); and

claim 27, line 27, step (d) change to step(e).

Claims 3-4 are objected to because the limitations "filtering the nets" is not described in the drawings.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claim 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by McBride (US 6,327,542).**

7. **With respect to claims 1 and 14**, McBride discloses a method and a computer product (abstract, col. 4, ll. 23-44, and col. 10, ll. 64-67) for noise analysis and correction noise violations for an integrated circuit design comprising steps of:

(claim 14) a medium for embodying a computer program for input to a computer (col. 2, ll. 6-40, col. 4, ll. 23-44, and col. 10, ll. 64-67); and

(claim 14) a computer program embodied in the medium for causing the computer to perform steps of (col. 2, ll. 6-40, col. 4, ll. 23-44 and col. 10, ll. 64-67):

(claims 1 and 14) (a) receiving as input a standard parasitic exchange file for an integrated circuit design (fig. 1, element 20, col. 3, ll. 63-67);

(claims 1 and 14) (b) parsing the standard parasitic exchange file to generate a resistance graph (fig. 8, element 702, col. 9, ll. 52-56, and col. 11, ll. 4-7);

(claims 1 and 14) (c) generating a representation of the resistance graph to determine noise critical nets (fig. 7, element 602, col. 8, ll. 7-24, col. 9, ll. 52-56 and col. 12, ll. 2-53);

(claims 1 and 14) (d) generating a list of only noise critical nets (-- where the voltage value exceed a permissible value--) from the representation the resistance graph (fig. 8, element 712, col. 1, ll. 66-67, col. 2, ll. 1-17, col. 3, ll. 26-67, and col.11, ll. 35-41);

(claims 1 and 14) (e) selecting a victim net from the list of only noise critical nets (col. 10, ll. 1-9, evaluates each aggressor separately and col. 11, ll. 22-27, evaluates victim net by subtract from capacitance of the relevant aggressors from the total capacitance of conductor network);

(claims 1 and 14) (f) calculating a value of total crosstalk noise in the selected victim net from all aggressor nets relative to the selected victim net (col. 8, ll. 25-65, col. 11, ll. 64-67, col. 12, and col. 14, ll. 31-45); and

(claims 1 and 14) (g) generating as output the value of total crosstalk noise the selected victim net correcting a noise violation (col. 3, ll. 62-67 and col. 14, ll. 32-45).

8. **With respect to claims 2 and 15**, McBride discloses all the limitations of the set forth claims, wherein step (c) comprises generating one of a resistance tree and a resistance star tree as the representation of the resistance graph (RC-network) (fig. 4-5, col. 8, ll. 7-24).

9. **With respect to claims 3 and 16**, McBride discloses all the limitations of the set forth claims, wherein step (d) comprises filtering the nets (col. 13, ll. 4-12) in the representation of the resistance graph to exclude nets that are not subject to false switching from crosstalk noise (fig. 6, col. 8, ll. 25-55).

10. **With respect to claims 4 and 17**, McBride discloses all the limitations of the set forth claims, wherein step (d) comprises filtering the nets (col. 13, ll. 4-12) in the representation of the resistance graph to include nets that drive logical stages that drive noise critical nets (fig. 4-5, col. 7, ll. 63-67, and col. 8, ll. 1-24).

11. **With respect to claims 5 and 18**, McBride discloses all the limitations of the set forth claims, wherein step (f) comprises calculating (evaluating) a peak noise (voltage positive (rising) ramp) and a drop noise (voltage negative (falling) ramp) for the selected net (col. 9, ll. 26-42).

12. **With respect to claims 6 and 19**, McBride discloses all the limitations of the set forth claims, wherein step comprises comparing the peak noise and the drop noise to a peak noise (voltage positive (rising) ramp) threshold and a drop noise (voltage negative (falling) ramp) threshold for the selected victim net to determine whether a noise violation (exceeds predetermined value) may occur in the selected net (col. 9, ll. 26-42, fig. 7, element 622, and col. 11, l. 35-45).

13. **With respect to claims 7 and 20**, McBride discloses all the limitations of the set forth claims, wherein step comprises generating a report (alert or error message) of a noise violation if the peak noise threshold or the drop noise threshold is exceeded (col. 9, ll. 26-42, col. 10, ll. 30-53).

Art Unit: 2825

14. **With respect to claims 8 and 21**, McBride discloses all the limitations of the set forth claims, wherein step comprises reporting a name of the selected victim net, the peak noise (voltage positive (rising) ramp), the drop noise (voltage negative (falling) ramp), and names of significant aggressor nets and their respective contributions to the total noise (col. 9, ll. 26-42, col. 10, ll. 38-53, and col. 11, ll. 35-45).

15. **With respect to claims 9 and 22**, McBride discloses all the limitations of the set forth claims, wherein step comprises calculating a crosstalk noise VX_m coupled into the selected victim net by an aggressor by the following formulas (col. 12, ll. 2-53, derived from formulas 1-7):

$$VX_m = V_{dd} \frac{\tau_{cm}}{\tau_T} \cdot \left(\frac{\tau_T}{\tau_m} \right)^{\frac{\tau_m}{\tau_m - \tau_T}} \quad \text{if } \tau_m - \tau_T \neq 0 \text{ and}$$

$$VX_m = V_{dd} \frac{\tau_{cm}}{\tau_T} \cdot e^{-1} \quad \text{if } \tau_m - \tau_T = 0 .$$

16. **With respect to claims 10 and 23**, McBride discloses all the limitations of the set forth claims wherein step (f) comprises calculating a ratio R_m of a coupling capacitance C_{cm} to a total net capacitance C_{vt} so that the crosstalk noise VX_m is given by (col. 12, ll. 2-53, derived from formulas 1-7 and col. 13-14, with addition formulas 8-13):

$$VX_m = V_{dd} \frac{\tau_{cm}}{\tau_T} \cdot \left(\frac{\tau_T}{\tau_m} \right)^{\frac{\tau_m}{\tau_m - \tau_T}} \quad \text{if } \tau_m - \tau_T \neq 0 \text{ and}$$

$$VX_m = V_{dd} \frac{\tau_{cm}}{\tau_T} \cdot e^{-1} \quad \text{if } \tau_m - \tau_T = 0 .$$

17. **With respect to claims 11 and 24**, McBride discloses all the limitations of the set forth claims, further comprising a step of selecting an equivalent transient resistance of an aggressor net as an aggressor driver resistance for worst case, best case, and nominal case operating conditions from a cell library (-- the value of resistor of circuit model may also be readily obtained by evaluating the netlist file (cell library--) (col. 7, ll. 7, ll. 20-27 and col. 8, ll. 6-24).

18. **With respect to claims 12 and 25**, McBride discloses all the limitations of the set forth claims, further comprising a step of determining (evaluating or computing) values of a peak noise threshold and a drop noise threshold for the selected net (col. 9, ll. 26-42) and storing the values in a cell library (-- positive going and negative going ramp voltage source values will be computed, and then using these values for the simulation --)(col. 10, ll. 230-53).

19. **With respect to claims 13 and 26**, McBride discloses all the limitations of the set forth claims wherein step (g) further comprises correcting a noise violation in the integrated circuit design by modifying a floorplan of the integrated circuit design wherein modifying the floorplan comprises: increasing driver power of the selected victim net (col. 13, ll. 20-62, -- increasing the driver size that increases the driver power --).

20. **With respect to claim 27**, McBride discloses a method and a computer product (abstract, col. 4, ll. 23-44, and col. 10, ll. 64-67) for noise analysis and correction noise violations for an integrated circuit design comprising steps of:

(a) receiving as input a standard parasitic exchange file for an integrated circuit design (fig. 1, element 20, col. 3, ll. 63-67);

(b) parsing the standard parasitic exchange file to generate a resistance graph (fig. 8, element 702, col. 9, ll. 52-56, and col. 11, ll. 4-7);

(c) generating a list of only noise critical nets (-- where the voltage value exceed a permissible value--) from the representation the resistance graph (fig. 8, element 712, col. 1, ll. 66-67, col. 2, ll. 1-17, col. 3, ll. 26-67, and col.11, ll. 35-41);

(d) calculating a value of total crosstalk noise in the selected victim net (col. 10, ll. 1-9, evaluates each aggressor separately and col. 11, ll. 22-27, evaluates victim net by subtract from capacitance of the relevant aggressors from the total capacitance of conductor network) in the list of only noise critical nets from all aggressor nets relative to the selected victim net (col. 8, ll. 25-65, col. 11, ll. 64-67, col. 12, and col. 14, ll. 31-45); and

(e) generating as output (fig. 1, critical path report 22) the value of total crosstalk noise the selected victim net correcting a noise violation col. 3, ll. 62-67 and col. 14, ll. 32-45).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghia M. Doan whose telephone number is 571-272-5973. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2825

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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11/25/05